

1   **WHAT IS CLAIMED IS:**

2           1. An array optical subassembly for an array optical active component,  
3   comprising:

4           a substrate having two opposite surfaces, wherein a lens array is formed  
5   on one surface and multiple metal pads, multiple metal lines and alignment keys  
6   are formed on the other surface;

7           at least one optical active component deposited on the substrate, wherein  
8   the at least one optical active component has a multiple source array  
9   corresponding to the lens array of the substrate, multiple first terminals  
10   corresponding to the metal pads, and alignment keys corresponding to the  
11   alignment keys of the substrate;

12          a driver IC connected on the substrate, wherein the driver IC has  
13   multiple second terminals corresponding to the metal pads;

14          a circuit board connected on the substrate, wherein the circuit board has  
15   multiple third terminals corresponding to the metal pads; and

16          a cover covering the substrate, the at least one optical active component,  
17   the driver IC and the circuit board.

18          2. The array optical subassembly as claimed in claim 1, wherein the  
19   specific area of the substrate is made of transparent material and the metal pads  
20   include first metal pads, second metal pads and third metal pads; wherein

21          the first metal pads are respectively connected to the first terminals;

22          the second metal pads are respectively connected to the second terminals;

23   and

24          the third metal pads are respectively connected to the third terminals.

1           3. The array optical subassembly as claimed in claim 1, wherein the  
2     source array of the at least one optical active component is composed of lasers.

3           4. The array optical subassembly as claimed in claim 1, wherein the  
4     source array of the at least one optical active component is composed of light  
5     detectors.

6           5. The array optical subassembly as claimed in claim 1, wherein the  
7     circuit board is flexible.

8           6. The array optical subassembly as claimed in claim 1, wherein the  
9     cover is a semi-airtight type or airtight type.

10          7. The array optical subassembly as claimed in claim 1, wherein each  
11     source array and each lens array respectively has one optical axis and the optical  
12     axes of the source array and lens array are parallel.

13          8. The array optical subassembly as claimed in claim 1, further  
14     comprising a connecting set having two opposite holes and the surface forming  
15     the lens array further forms two opposite guide rods, wherein the two opposite  
16     rods are respectively inserted to the two opposite holes.

17          9. The array optical subassembly as claimed in claim 8, wherein the  
18     connecting set further defines one recess for retaining a fiber connector with an  
19     optical fiber array, wherein the optical fiber array has one optical axis which is  
20     parallel with the optical axis of each lens array.

21          10. An array optical assembly comprising:  
22         an array optical subassembly having:

23                 a substrate having two opposite surfaces, wherein a lens array is  
24     formed on one surface and multiple metal pads, multiple metal lines and

alignment keys are formed on the other surface;  
at least one optical active component deposited on the substrate,  
wherein the at least one optical active component has a multiple source array  
corresponding to the lens array of the substrate, multiple first terminals  
corresponding to the metal pads, and alignment keys corresponding to the  
alignment keys of the substrate;  
a driver IC connected on the substrate, wherein the driver IC has  
multiple second terminals corresponding to the metal pads;  
a circuit board connected on the substrate, wherein the circuit board  
has multiple third terminals corresponding to the metal pads; and  
a cover covering the substrate, the at least one optical active  
component, the driver IC and the circuit board;  
a base connected between the cover of the array optical assembly and the  
circuit board; and  
a main circuit board electronically connected to the circuit board.

11. The array optical assembly as claimed in claim 10, wherein the base  
is L-shaped and has a vertical portion and a horizontal portion; wherein the  
vertical portion is defined with a through hole wherein the cover is retained in the  
through hole.

12. The array optical assembly as claimed in claim 10, wherein the  
specific area of the substrate is made of transparent material and the metal pads  
include first metal pads, second metal pads and third metal pads; wherein  
the first metal pads are respectively connected to the first terminals;  
the second metal pads are respectively connected to the second terminals;

1 and

2 the third metal pads are respectively connected to the third terminals.

3 13. The array optical assembly as claimed in claim 11, further  
4 comprising a heat sink, which is mounted on the horizontal portion of the base.

5 14. The array optical assembly as claimed in claim 10, wherein the  
6 source array of the at least one optical active component is composed of multiple  
7 lasers.

8 15. The array optical assembly as claimed in claim 10, wherein the  
9 source array of the at least one optical active component is composed of light  
10 detectors.

11 16. The array optical assembly as claimed in claim 10, wherein the  
12 circuit board is flexible.

13 17. The array optical assembly as claimed in claim 10, wherein the cover  
14 is a semi-airtight type or airtight type.

15 18. The array optical assembly as claimed in claim 10, wherein each  
16 source array and each lens array respectively has one optical axis and the optical  
17 axes of the source array and lens array are parallel.

18 19. The array optical assembly as claimed in claim 10, further  
19 comprising a connecting set having two opposite holes and the surface forming  
20 the lens array further forms two opposite guide rods, wherein the two opposite  
21 rods are respectively inserted to the two opposite holes.

22 20. The array optical assembly as claimed in claim 19, wherein the  
23 connecting set is further defined with one recess for retaining a fiber connector  
24 with an optical fiber array, wherein the optical fiber array has one optical axis

- 1 which is parallel with the optical axis of each lens array.